

Appl. No. : 10/595,804
Filed : June 12, 2006

REMARKS

Applicant wishes to thank Examiner Momper and Supervisory Examiner Siconolfi for the courteous telephone interview extended to their representative that was conducted on March 15, 2010. This response is fully consistent with the interview.

Amendments

As discussed in the interview, Applicants have amended Claim 2 to clarify the definitions of the helical tooth angle and the core cord twist angle. Support can be found in, for example, Fig. 7 and the corresponding description including page 7, lines 20-23, of the specification as originally filed, and also Claim 10.

Claims 17 and 18 have been added. Support can be found in, for example, page 1, lines 7-10, and page 3, lines 30-33.

No new matter has been added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Rejections of Claims 2-12 and 14-16 Under 35 U.S.C. § 103

Claims 2-12 and 14-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakamoto (JP 56-159143 A) in view of Fujita (US 6,216,853) and Kimura (JP 10-184808 A) and Ueda et al. ("Noise and Life of Helical Timing Belt Drives") and Onoe et al. (US 4,790,802).

As the Office Action states, Modified Sakamoto fails to explicitly disclose a core cord twist angle set to 15° to 2° (Claims 2 and 10).

As discussed in the interview, Onoe et al. also fails to teach a core cord twist angle set to 15° to 2° . Although in Onoe et al., the term "the final twisting angle" is used at col. 4, line 36, and the term "Angle of final twist α ($^{\circ}$)" is used for the x-axis of Fig. 7, they are incorrect and should have been "the first twisting angle" and "Angle of first twist α ($^{\circ}$)", respectively, as stated in ¶1 of a Declaration by Onoe (a copy of the Declaration is attached as the representative agreed in the interview). As Onoe explains in the Declaration, the angle of 87° - 93° shown in Fig. 7 is of the first twist angle α , not of the final twist angle γ , and γ was *constant* and calculated at 28° (¶2). As shown in Fig. 2 of Onoe et al., γ is the twisting angle of twisted yarn 12 with reference to a line perpendicular to a longitudinal direction of the load carrier, and the core cord twist angle as defined in Claims 2 and 10 correspond to $(90^{\circ}-\gamma)$, rather than γ . Thus, in Fig. 7, Onoe et al.

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teaches that $(90^\circ - \gamma)$ was constant and calculated at 62° , and does not teach a relationship between oscillation of the belt and the angle of final twist. As Onoe states in the Declaration, the above incorrect terms are likely translation errors which must have occurred inadvertently (§4). In view of the above, Onoe et al. does not teach a core cord twist angle set to 15° to 2° in any predictable manner.

Further, in Onoe et al., a reduction of oscillation of the belt is related to the first twist angle α which is determined based on two other parameters β and γ ($\alpha = \beta + (90^\circ - \gamma)$, col. 3, line 28). The current case law states a parameter is not a result-effective variable if multiple other parameters can affect the "recognized result." *In re Antonie*, 559 F.2d 618, 620 (C.C.P.A. 1977). In Onoe et al., more than one parameter is related to a reduction of oscillation, and thus, the relationship between γ and a reduction of oscillation cannot be established. Onoe et al. does not provide a motivation to control γ to reduce oscillation.

Furthermore, as discussed in the interview, Onoe's belt is a power transmission belt which is used "under the high speed condition (for example, at around 60 m/second)" (col. 1, lines 18-19) and is run continuously at 1,800 r.p.m. (col. 4, 8-9), for example. A helical synchronous belt as claimed is a timing belt which is dissimilar to a power transmission belt and is not used under high speed conditions (the angled teeth will generate extremely high oscillation under high speed conditions). The helical synchronous belt is used for precise movement. The helical synchronous belt as claimed is adapted to move back and forth a carriage of a printer or copy machine. The oscillation problem in a power transmission belt is dissimilar to the vibration problem in a helical synchronous belt caused by reciprocating movement. A person of ordinary skill in the art would not be motivated to modify a power transmission belt to arrive at a helical synchronous belt as defined in Claims 2 and 10.

Sakamoto, Fujita, Kimura, and Ueda et al. do not supply the deficiencies of Onoe et al. In Claims 2 and 10, by adjusting the core cord twist angle, drawbacks such as vibration caused by reciprocating movement of helical teeth can be overcome. These features are not taught by any of the cited references.

Claims 2 and 10 would not have been obvious over Sakamoto, Fujita, Kimura, Ueda et al., and Onoe et al. Claims 3-9, 11-12, and 14-16 also would not have been obvious at least due to their dependencies from Claim 2 or 10 in addition to the other further distinguishing features. Applicants respectfully request withdrawal of the rejections.

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New Claims 17-18

Claims 17-18 recite that the helical synchronous belt is adapted to move back and forth a carriage of a printer or copier. This clearly distinguishes the helical synchronous belt from the power transmission belt of Onoe et al. Thus, Claims 17 and 18 would not be obvious not only due to their dependencies from Claim 2 or 10, but also due to the above distinguishing feature.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. The grounds for rejection which are not discussed herein are moot and Applicants expressly do not acquiesce in the findings not separately addressed. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By:



Daniel E. Altman
Registration No. 34,115
Attorney of Record
Customer No. 20,995
(949) 760-0404

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